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**D119-796-141TRN**  
**Job Sheet 201868**



**Part No:** D119-796-141TRN

**Job Qty:** 1 pcs

**Part Name:** Crosstube Turning Detail



**Part Weight:** 0 lbs

**Status:** New

**Priority:** Medium

**Job Created:** 10/16/19

**Job Tracking No:**

**Due Date:** 10/30/19

**Created By:** Marie Lajeunesse

**Type:** Stock

**Description:**

**Note:** D119-796-141 REV H IPP REV A RQ 14/06/06 VERIFIED BY DD IPP REV:B 16.05.04 AS PER DWG REV.H  
DD VERF:JLM

**Ship Via:**

### Bill of Materials

### Job Routing

| Op No | Operation            | Qty      | Start Date | Due Date | Standard  |         | Workcenter/Supplier   |  | Lead Time | DAS Sign-off          |
|-------|----------------------|----------|------------|----------|-----------|---------|-----------------------|--|-----------|-----------------------|
|       |                      |          |            |          | Setup Hrs | Run Hrs | Workcenter / Supplier |  |           |                       |
| 100   | Mori Seiki TL-40 - 1 | 1<br>pcs |            | 10/30/19 | 1.00      | 1.52    | Mori Seiki TL-40 - 1  |  |           | 66<br>9-89 2019/12/02 |
| 110   | QC 2                 | 1<br>pcs |            | 10/30/19 | 0.00      | 0.00    | QC 2 - 1              |  |           |                       |
|       |                      |          |            |          |           |         | QC 2 - 12             |  |           |                       |
|       |                      |          |            |          |           |         | QC 2 - 14             |  |           |                       |
|       |                      |          |            |          |           |         | QC 2 - 17             |  |           |                       |
|       |                      |          |            |          |           |         | QC 2 - 19             |  |           |                       |
|       |                      |          |            |          |           |         | QC 2 - 2              |  |           |                       |
|       |                      |          |            |          |           |         | QC 2 - 20             |  |           |                       |
|       |                      |          |            |          |           |         | QC 2 - 22             |  |           |                       |
|       |                      |          |            |          |           |         | QC 2 - 23             |  |           |                       |
|       |                      |          |            |          |           |         | QC 2 - 25             |  |           |                       |
|       |                      |          |            |          |           |         | QC 2 - 32             |  |           |                       |
|       |                      |          |            |          |           |         | QC 2 - 33             |  |           |                       |
|       |                      |          |            |          |           |         | QC 2 - 35             |  |           |                       |
|       |                      |          |            |          |           |         | QC 2 - 39             |  |           |                       |
|       |                      |          |            |          |           |         | QC 2 - 4              |  |           |                       |
|       |                      |          |            |          |           |         | QC 2 - 40             |  |           |                       |
|       |                      |          |            |          |           |         | QC 2 - 44             |  |           |                       |
|       |                      |          |            |          |           |         | QC 2 - 45             |  |           |                       |
|       |                      |          |            |          |           |         | QC 2 - 48             |  |           |                       |
|       |                      |          |            |          |           |         | QC 2 - 49             |  |           |                       |
|       |                      |          |            |          |           |         | QC 2 - 50             |  |           |                       |
|       |                      |          |            |          |           |         | QC 2 - 51             |  |           |                       |
|       |                      |          |            |          |           |         | QC 2 - 52             |  |           |                       |
|       |                      |          |            |          |           |         | QC 2 - 57             |  |           |                       |
|       |                      |          |            |          |           |         | QC 2 - 62             |  |           |                       |
|       |                      |          |            |          |           |         | QC 2 - 63             |  |           |                       |
|       |                      |          |            |          |           |         | QC 2 - 8              |  |           |                       |
|       |                      |          |            |          |           |         | QC 2 - 66             |  |           |                       |
|       |                      |          |            |          |           |         | QC 2 - 64             |  |           |                       |

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|     |                            |          |          |           |                               |
|-----|----------------------------|----------|----------|-----------|-------------------------------|
|     |                            |          |          | QC 2 - 65 |                               |
|     |                            |          |          | QC 2 - 5  |                               |
|     |                            |          |          | QC 2 - 71 |                               |
|     |                            |          |          | QC 2 - 73 |                               |
|     |                            |          |          | QC 2 - 69 |                               |
| 120 | Mori Seiki TL-40 - 1 - B4B | 1<br>pcs | 10/30/19 | 1.00 1.52 | Mori Seiki TL-40 - 1 -<br>B4B |
| 130 | QC 2                       | 1<br>pcs | 10/30/19 | 0.00 0.00 | QC 2 - 1                      |
|     |                            |          |          |           | QC 2 - 12                     |
|     |                            |          |          |           | QC 2 - 14                     |
|     |                            |          |          |           | QC 2 - 17                     |
|     |                            |          |          |           | QC 2 - 19                     |
|     |                            |          |          |           | QC 2 - 2                      |
|     |                            |          |          |           | QC 2 - 20                     |
|     |                            |          |          |           | QC 2 - 22                     |
|     |                            |          |          |           | QC 2 - 23                     |
|     |                            |          |          |           | QC 2 - 25                     |
|     |                            |          |          |           | QC 2 - 32                     |
|     |                            |          |          |           | QC 2 - 33                     |
|     |                            |          |          |           | QC 2 - 35                     |
|     |                            |          |          |           | QC 2 - 39                     |
|     |                            |          |          |           | QC 2 - 4                      |
|     |                            |          |          |           | QC 2 - 40                     |
|     |                            |          |          |           | QC 2 - 44                     |
|     |                            |          |          |           | QC 2 - 45                     |
|     |                            |          |          |           | QC 2 - 48                     |
|     |                            |          |          |           | QC 2 - 49                     |
|     |                            |          |          |           | QC 2 - 50                     |
|     |                            |          |          |           | QC 2 - 51                     |
|     |                            |          |          |           | QC 2 - 52                     |
|     |                            |          |          |           | QC 2 - 57                     |
|     |                            |          |          |           | QC 2 - 62                     |
|     |                            |          |          |           | QC 2 - 63                     |
|     |                            |          |          |           | QC 2 - 8                      |
|     |                            |          |          |           | QC 2 - 66                     |
|     |                            |          |          |           | QC 2 - 64                     |
|     |                            |          |          |           | QC 2 - 65                     |
|     |                            |          |          |           | QC 2 - 5                      |
|     |                            |          |          |           | QC 2 - 71                     |
|     |                            |          |          |           | QC 2 - 73                     |
|     |                            |          |          |           | QC 2 - 69                     |
| 140 | QC 8                       | 1<br>pcs | 10/30/19 | 0.00 0.00 | QC 8 - 12                     |
|     |                            |          |          |           | QC 8 - 14                     |
|     |                            |          |          |           | QC 8 - 17                     |
|     |                            |          |          |           | QC 8 - 20                     |
|     |                            |          |          |           | QC 8 - 25                     |
|     |                            |          |          |           | QC 8 - 3                      |
|     |                            |          |          |           | QC 8 - 32                     |
|     |                            |          |          |           | QC 8 - 33                     |
|     |                            |          |          |           | QC 8 - 35                     |
|     |                            |          |          |           | QC 8 - 39                     |
|     |                            |          |          |           | QC 8 - 4                      |
|     |                            |          |          |           | QC 8 - 44                     |
|     |                            |          |          |           | QC 8 - 45                     |
|     |                            |          |          |           | QC 8 - 49                     |
|     |                            |          |          |           | QC 8 - 58                     |
|     |                            |          |          |           | QC 8 - 8                      |
|     |                            |          |          |           | QC 8 - 9                      |
|     |                            |          |          |           | QC 8 - 68                     |

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|     |                               |          |          |           |                           |  |
|-----|-------------------------------|----------|----------|-----------|---------------------------|--|
|     |                               |          |          |           | QC 8 - 67                 |  |
|     |                               |          |          |           | QC 8 - 1 (A)              |  |
|     |                               |          |          |           | QC 8 - 47                 |  |
|     |                               |          |          |           | QC 8 - 40                 |  |
|     |                               |          |          |           | QC 8 - 52                 |  |
|     |                               |          |          |           | QC 8 - 23                 |  |
|     |                               |          |          |           | QC 8 - 57                 |  |
|     |                               |          |          |           | QC 8 - 76                 |  |
|     |                               |          |          |           | QC 8 - 61                 |  |
|     |                               |          |          |           |                           |  |
| 145 | Crosstubes - 2 - B4B          | 1<br>pcs | 10/30/19 | 0.00 0.33 | Crosstubes - 1 - B4B      |  |
|     |                               |          |          |           | Crosstubes - 2 - B4B      |  |
|     |                               |          |          |           | Crosstubes - 3 - B4B      |  |
|     |                               |          |          |           | Crosstubes - 4 - B4B      |  |
| 150 | Handfinish - 1-1 Chemical-B4B | 1<br>pcs | 10/30/19 | 0.00 0.40 | Handfinish - 1 - 1 - B4B  |  |
|     |                               |          |          |           | Handfinish - 1 - 2 - B4B  |  |
|     |                               |          |          |           | Handfinish - 1 - 3 - B4B  |  |
|     |                               |          |          |           | Handfinish - 1 - 4 - B4B  |  |
|     |                               |          |          |           | Handfinish - 1 - 5 - B4B  |  |
|     |                               |          |          |           | Handfinish - 1 - 6 - B4B  |  |
|     |                               |          |          |           | Handfinish - 1 - 7 - B4B  |  |
|     |                               |          |          |           | Handfinish - 1 - 8 - B4B  |  |
|     |                               |          |          |           | Handfinish - 1 - 9 - B4B  |  |
|     |                               |          |          |           | Handfinish - 1 - 10 - B4B |  |
|     |                               |          |          |           | Handfinish - 1 - 11 - B4B |  |
|     |                               |          |          |           | Handfinish - 1 - 12 - B4B |  |
|     |                               |          |          |           | Handfinish - 1 - 13 - B4B |  |
|     |                               |          |          |           | Handfinish - 1 - 14 - B4B |  |
|     |                               |          |          |           | Handfinish - 1 - 15 - B4B |  |
|     |                               |          |          |           | Handfinish - 1 - 16 - B4B |  |
|     |                               |          |          |           | Handfinish - 1 - 17 - B4B |  |
|     |                               |          |          |           | Handfinish - 1 - 18 - B4B |  |
|     |                               |          |          |           | Handfinish - 1 - 19 - B4B |  |
|     |                               |          |          |           | Handfinish - 1 - 20 - B4B |  |
|     |                               |          |          |           | Handfinish - 1 - 21 - B4B |  |
|     |                               |          |          |           | Handfinish - 1 - 22 - B4B |  |
| 160 | QC 7                          | 1<br>pcs | 10/30/19 | 0.00 0.00 | QC 7 - 10                 |  |
|     |                               |          |          |           | QC 7 - 13                 |  |
|     |                               |          |          |           | QC 7 - 14                 |  |
|     |                               |          |          |           | QC 7 - 15                 |  |
|     |                               |          |          |           | QC 7 - 17                 |  |
|     |                               |          |          |           | QC 7 - 18                 |  |
|     |                               |          |          |           | QC 7 - 19                 |  |
|     |                               |          |          |           | QC 7 - 2                  |  |
|     |                               |          |          |           | QC 7 - 28                 |  |
|     |                               |          |          |           | QC 7 - 3                  |  |
|     |                               |          |          |           | QC 7 - 30                 |  |
|     |                               |          |          |           | QC 7 - 34                 |  |
|     |                               |          |          |           | QC 7 - 36                 |  |
|     |                               |          |          |           |                           |  |

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|     |                             |          |          |           |                        |
|-----|-----------------------------|----------|----------|-----------|------------------------|
|     |                             |          |          | QC 7 - 37 |                        |
|     |                             |          |          | QC 7 - 41 |                        |
|     |                             |          |          | QC 7 - 47 | JW 19-12-10            |
|     |                             |          |          | QC 7 - 48 |                        |
|     |                             |          |          | QC 7 - 51 |                        |
|     |                             |          |          | QC 7 - 58 |                        |
|     |                             |          |          | QC 7 - 59 |                        |
|     |                             |          |          | QC 7 - 60 |                        |
|     |                             |          |          | QC 7 - 9  |                        |
|     |                             |          |          | QC 7 - 68 |                        |
|     |                             |          |          | QC 7 - 50 |                        |
|     |                             |          |          | QC 7 - 67 |                        |
|     |                             |          |          | QC 7 - 40 |                        |
|     |                             |          |          | QC 7 - 24 |                        |
|     |                             |          |          | QC 7 - 43 |                        |
|     |                             |          |          | QC 7 - 61 |                        |
|     |                             |          |          | QC 7 - 81 |                        |
|     |                             |          |          | QC 7 - 76 |                        |
|     |                             |          |          | QC 7 - 79 |                        |
| 170 | Packaging 3-1 - Stock - B4B | 1<br>pcs | 10/30/19 | 0.00 0.00 | Packaging 3 - 1 - B4B  |
|     |                             |          |          |           | Packaging 3 - 2 - B4B  |
|     |                             |          |          |           | Packaging 3 - 3 - B4B  |
|     |                             |          |          |           | Packaging 3 - 4 - B4B  |
|     |                             |          |          |           | Packaging 3 - 5 - B4B  |
|     |                             |          |          |           | Packaging 3 - 6 - B4B  |
|     |                             |          |          |           | Packaging 3 - 7 - B4B  |
|     |                             |          |          |           | Packaging 3 - 8 - B4B  |
|     |                             |          |          |           | Packaging 3 - 9 - B4B  |
|     |                             |          |          |           | Packaging 3 - 10 - B4B |
|     |                             |          |          |           | Packaging 3 - 11 - B4B |
|     |                             |          |          |           | Packaging 3 - 12 - B4B |
|     |                             |          |          |           | Packaging 3 - 13 - B4B |
|     |                             |          |          |           | Packaging 3 - 14 - B4B |
|     |                             |          |          |           | Packaging 3 - 15 - B4B |
|     |                             |          |          |           | Packaging 3 - 16 - B4B |
|     |                             |          |          |           | Packaging 3 - 17 - B4B |
|     |                             |          |          |           | Packaging 3 - 18 - B4B |
|     |                             |          |          |           | Packaging 3 - 19 - B4B |
|     |                             |          |          |           | Packaging 3 - 20 - B4B |
|     |                             |          |          |           | Packaging 3 - 21 - B4B |
|     |                             |          |          |           | Packaging 3 - 22 - B4B |
|     |                             |          |          |           | Packaging 3 - 23 - B4B |
|     |                             |          |          |           | Packaging 3 - 24 - B4B |
|     |                             |          |          |           | Packaging 3 - 25 - B4B |
|     |                             |          |          |           | Packaging 3 - 26 - B4B |
|     |                             |          |          |           | Packaging 3 - 27 - B4B |
|     |                             |          |          |           | Packaging 3 - 28 - B4B |
|     |                             |          |          |           | Packaging 3 - 29 - B4B |
|     |                             |          |          |           | Packaging 3 - 30 - B4B |
|     |                             |          |          |           | Packaging 3 - 31 - B4B |
|     |                             |          |          |           | Packaging 3 - 32 - B4B |
|     |                             |          |          |           | Packaging 3 - 33 - B4B |
|     |                             |          |          |           | Packaging 3 - 34 - B4B |
|     |                             |          |          |           | Packaging 3 - 35 - B4B |
|     |                             |          |          |           | Packaging 3 - 36 - B4B |
| 180 | QC 21 - FG                  | 1<br>pcs | 10/30/19 | 0.00 0.00 | QC 21 - FG - 21        |
|     |                             |          |          |           | QC 21 - FG - 70        |
|     |                             |          |          |           | QC 21 - FG - 53        |

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Part Op 100 - 1-Fill tube with sand &amp; install plugs on both ends as per Folio FB316 2-Turn first side as per Folio FB316 3-Blend

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Descriptions: transition lines only, \*\*do not sand whole tube\*\*: FOLIO REV: H DWG REV: H \*Use mill bastard file, brush file repeatedly with file card. \*Do not use sandpaper coarser than 320 grit.

110 - (QC2- Inspect parts off machine FAI/FAIB)

120 - 1-Turn second side as per Folio FB316 2-Blend transition lines only, \*\*do not sand whole tube\*\*: 3-Remove sand and plugs 4- scribe batch # and part # as per dwg

130 - (QC2- Inspect parts off machine FAI/FAIB)

140 - (QC8- Inspect parts - second check)

145 - GRIND ONLY TRANSITION LINES SMOOTH LONGITUDE WAY.

150 - 1- handfinish X-TUBE INSIDE AND OUT 2- ALODINE AND ACID ETCH X-TUBE INSIDE AND OUT. USE RED SCOTCH BRITE

160 - (QC7-Inspect Chemical Conversion Coat)

170 - (Identify as per dwg & Stock Location: \_\_\_\_\_) LOCATION : LG014

180 - (QC21- Final Inspection - Work Order Release)

## Job BOM

| Part / Item | Component Name     | Quantity     | Operation                | Container |
|-------------|--------------------|--------------|--------------------------|-----------|
| D6024-103   | Crosstube Material | 1 pcs (1 ea) | 100-Mori Seiki TL-40 - 1 | S235857   |

## Job Allocations

| Operation                | Component Part | Required | Inventory | Allocated |
|--------------------------|----------------|----------|-----------|-----------|
| 100-Mori Seiki TL-40 - 1 | D6024-103      | 1        | 0         | 0         |

## Part Specifications

Specifications could not be found.



Container No: S236595



Part: D119-796-141TRN

Job No: 201868

Serial No/Batch: S236595

Revision: H

Inspector:

Exp Date:

Instructions:

Dart Aerospace Ltd.  
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CANADA  
TEL.: 1 613 832-5200  
Email: sales@dartaero.com  
www.dartaerospace.com

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Date: 12/02/19



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|---------------------------------------------------------|-------------------------------------|
| <b>DART AEROSPACE LTD</b>                               | <b>Work Order:</b> 701 868          |
| <b>Description:</b> Crosstube Assembly (AW119 MKII Fwd) | <b>Part Number:</b> D119-796-141TRN |
| <b>Inspection Dwg:</b> D119-796-141 Rev: H              | <b>Page 1 of 2</b>                  |

**FIRST ARTICLE INSPECTION CHECKLIST**

|        | Inspection Sheet<br>Drawing Dimension | Tolerance     | Actual<br>Dimension | Accept | Reject | Method of<br>Inspection | Comments |
|--------|---------------------------------------|---------------|---------------------|--------|--------|-------------------------|----------|
| SIDE A | 6.00                                  | +/-0.030      | 6.00                | ✓      |        | CNC-08                  |          |
|        | 2.516                                 | +/-0.005      | 2.521               | ✓      |        | CNC-04                  |          |
|        | 2.333                                 | +0.005/-0.000 | 2.336               | ✓      |        | ↓                       |          |
|        | 2.333                                 | +0.005/-0.000 | 2.338               | ✓      |        |                         |          |
|        | 2.408                                 | +0.005/-0.000 | 2.413               | ✓      |        |                         |          |
|        | 2.502                                 | +0.005/-0.000 | 2.507               | ✓      |        |                         |          |
|        | 2.596                                 | +0.005/-0.000 | 2.600               | ✓      |        | CNC-04                  |          |
|        | 2.596                                 | +0.005/-0.000 | 2.601               | ✓      |        | "                       |          |
|        |                                       |               |                     |        |        |                         |          |
|        |                                       |               |                     |        |        |                         |          |
| SIDE B | 6.00                                  | +/-0.030      | 6.00                | ✓      |        | CNC-08                  |          |
|        | 2.516                                 | +/-0.005      | 2.521               | ✓      |        | CNC-04                  |          |
|        | 2.333                                 | +0.005/-0.000 | 2.336               | ✓      |        | ↓                       |          |
|        | 2.333                                 | +0.005/-0.000 | 2.338               | ✓      |        |                         |          |
|        | 2.408                                 | +0.005/-0.000 | 2.413               | ✓      |        |                         |          |
|        | 2.502                                 | +0.005/-0.000 | 2.507               | ✓      |        |                         |          |
|        | 2.596                                 | +0.005/-0.000 | 2.600               | ✓      |        | CNC-04                  |          |
|        | 2.596                                 | +0.005/-0.000 | 2.601               | ✓      |        | "                       |          |
|        |                                       |               |                     |        |        |                         |          |
|        |                                       |               |                     |        |        |                         |          |
|        | 102.26                                | +/-0.020      | 102.26              | ✓      |        | Tape                    |          |

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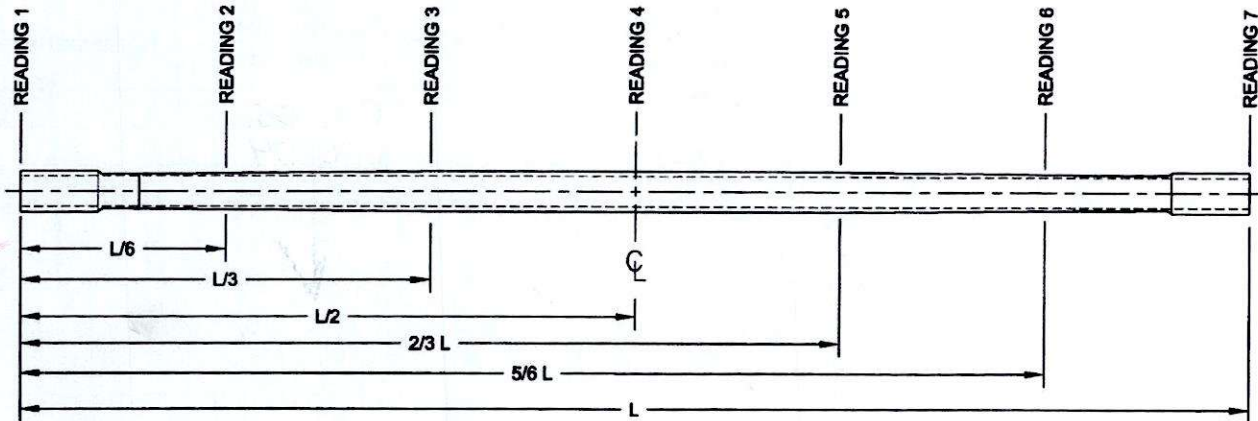
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|                                                         |                                     |
|---------------------------------------------------------|-------------------------------------|
| <b>DART AEROSPACE LTD</b>                               | <b>Work Order:</b> 201868           |
| <b>Description:</b> Crosstube Assembly (AW119 MKII Fwd) | <b>Part Number:</b> D119-796-141TRN |
| <b>Inspection Dwg:</b> D119-796-141 Rev: H              | <b>Page 2 of 2</b>                  |

### WALL THICKNESS MEASUREMENT



| Location              | WALL THICKNESS MEASUREMENT (IN) |      |      |      | Deviation<br>$\Delta w$<br>(max-min) | TOLERANCE |
|-----------------------|---------------------------------|------|------|------|--------------------------------------|-----------|
|                       | w1                              | w2   | w3   | w4   |                                      |           |
| READING 1<br>L=0"     | .259                            | .253 | .254 | .271 | .018                                 | 0.030"    |
| READING 2<br>L=17.043 | .183                            | .181 | .175 | .175 | .008                                 |           |
| READING 3<br>L=34.087 | .263                            | .268 | .272 | .265 | .009                                 | 0.063"    |
| READING 4<br>L=51.13  | .303                            | .309 | .300 | .299 | .010                                 |           |
| READING 5<br>L=68.173 | .270                            | .271 | .266 | .268 | .005                                 |           |
| READING 6<br>L=85.217 | .185                            | .176 | .171 | .181 | .014                                 | 0.030"    |
| READING 7<br>L=102.26 | .258                            | .256 | .258 | .261 | .005                                 |           |

#### Calibration Result

Actual Block Thickness: 100-300

Sitescan 250 Measured Thickness: 100-300

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|                     |            |
|---------------------|------------|
| <b>Measured by:</b> | DAS<br>66  |
| <b>Date:</b>        | 2019/12/03 |

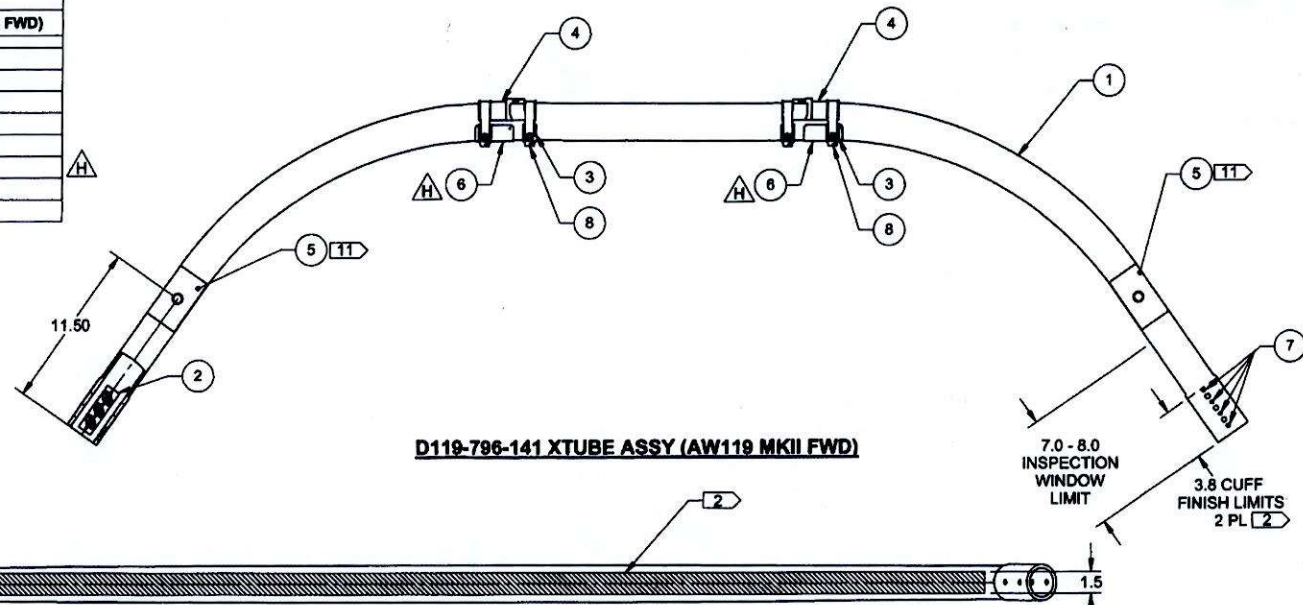
|                    |                   |
|--------------------|-------------------|
| <b>Audited by:</b> | DAS<br>76<br>9-89 |
| <b>Date:</b>       | 12/7/2019         |

|                              |  |
|------------------------------|--|
| <b>Preliminary Approval:</b> |  |
| <b>Date:</b>                 |  |

| Rev | Date     | Change                                 | Revised by | Approved |
|-----|----------|----------------------------------------|------------|----------|
| A   | 15.04.14 | New Issue (P/O D119-796-101)           | KJ         |          |
| B   | 15.05.14 | Tolerances revised per Dwg Rev G       | KJ         |          |
| C   | 16.05.27 | Dwg Rev updated                        | KJ         |          |
| D   | 16.09.13 | Tolerance revised for Reading 3, 6 & 7 | KJ         |          |



| ITEM | QTY | P/N             | DESCRIPTION                 |
|------|-----|-----------------|-----------------------------|
|      | X   | D119-796-141    | XTUBE ASSY (AW119 MKII FWD) |
| 1    | 1   | D119-796-141BND | CROSSTUBE, FWD              |
| 2    | 4   | D2873-043       | RADIUS BLOCK                |
| 3    | 4   | D5123-3         | CLAMP CUSHION               |
| 4    | 2   | D5124-1         | FWD SUPPORT                 |
| 5    | 2   | D5152-041       | FWD POST MOUNT ASSY         |
| 6    | 2   | D5305-1         | SHIM                        |
| 7    | 16  | CR3212-4-08     | RIVET, BLIND CSK            |
| 8    | 4   | MS21920-24      | CLAMP                       |



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WORK ORDER  
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19-10-14

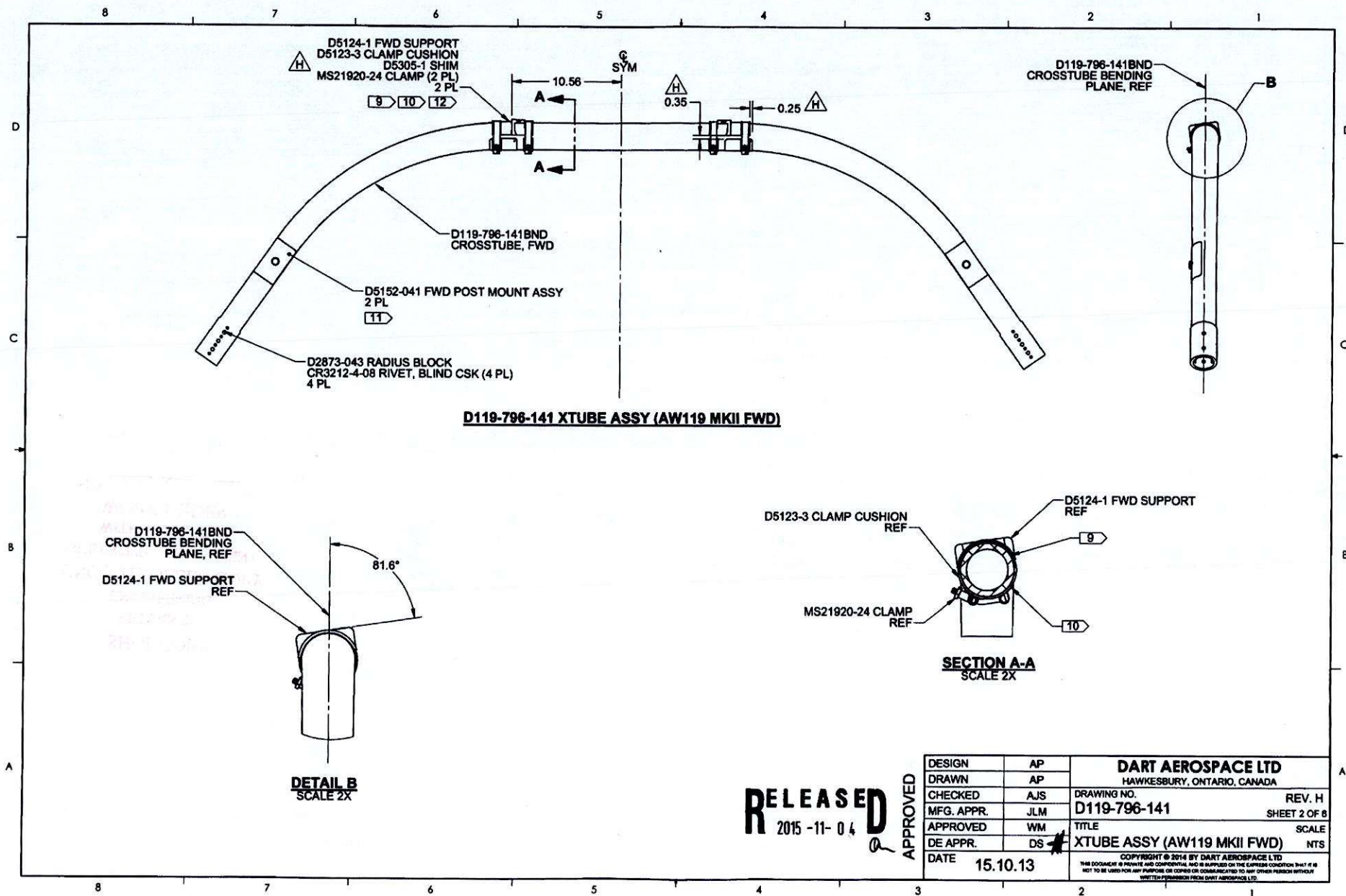
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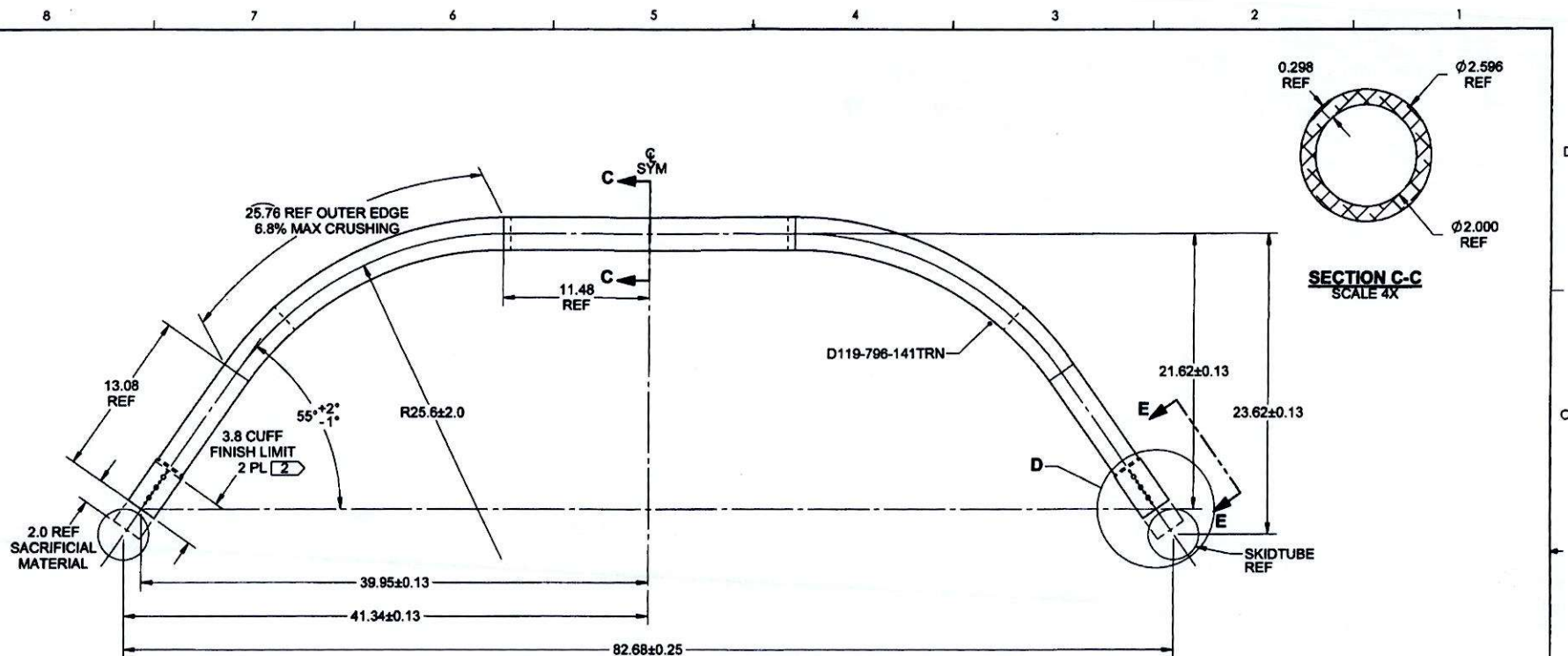
#### NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: APPLY MATTE CLEAR COAT PER QSI 005 4.2  
MASK D5124-1 FWD SUPPORTS, D5305-1 SHIMS AS WELL AS UNDERSIDE OF CROSSTUBE AS SHOWN (B3-1, HATCHED AREA),  
PAINT OUTSIDE PER DART QSI 005 4.2 AFTER APPLYING CLEAR COAT  
DO NOT APPLY FINISH (PAINT OR CLEAR COAT) TO CUFFS IN LOCATION SHOWN, MASK PRIOR TO FINISHING
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: IDENTIFY USING PART NUMBER "D119-796-141" AND BATCH NUMBER ON INSIDE OF CUFF PER QSI 044 6.4
- 7) WEIGHT: 18.54 lbs
- 8) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE.  
THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM DEFECTS SUCH AS SCRATCHES, NICKS OR DENTS.  
DEFECTS UP TO 0.005 MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 9) PRIOR TO FINISHING, ABRASE MATING SURFACES OF D5124-1 FWD SUPPORTS AND CROSSTUBE WITH SCOTCH BRITE 7447 RED AND REMOVE RESIDUE WITH DUPONT 4105S WASH'N'WIPE DEGREASER. APPLY A 0.1 MIN THK LAYER OF PROSEAL 890 ON THE INSIDE CONCAVE SURFACE OF THE D5124-1 FWD SUPPORTS AND INSTALL AT AN 8.4" OFFSET FROM THE CROSSTUBE BENDING PLANE. INSTALL THE MS21920-24 CLAMPS AND D5123-3 CLAMP CUSHIONS WHILE WET.
- 10) TORQUE MS21920 CLAMPS 80 - 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY, THE NUT IS FACING AFT AND HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.
- 11) PRIOR TO FINISHING, ABRASE MATING SURFACES OF CROSSTUBE AND D5152-041 WITH SCOTCH BRITE 7447 RED AND REMOVE RESIDUE WITH DUPONT 4105S WASH'N'WIPE DEGREASER. INSTALL D5152-041 WITH LAYER OF PROSEAL 890 ON INSIDE CONCAVE SURFACE, 0.1 MIN THK. LOCATE D5152-041 USING TOOL DT10089.
- 12) PRIOR TO FINISHING, ABRASE MATING SURFACES OF CROSSTUBE AND D5305-1 SHIM WITH SCOTCH BRITE 7447 RED AND REMOVE RESIDUE WITH DUPONT 4105S WASH'N'WIPE DEGREASER. INSTALL D5305-1 SHIM WITH LAYER OF PROSEAL 890 ON INSIDE CONCAVE SURFACE, 0.1 MIN THK. USE ADDITIONAL TEMPORARY MS21920-24 CLAMP TO APPLY CLAMPING PRESSURE FOR 72 HOURS.

|            |                                                                                                                                                                                |                                                                                                                                                                                                                                                                                    |              |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| H          | ADD D5305-1 SHIM, D6024-103 WAS D6005-103, D5124-1 NOW INSTALLED ON PRIMER                                                                                                     | AP                                                                                                                                                                                                                                                                                 | 15.10.13     |
| G          | FINISHING ORDER ADJUSTED, CR3212-4-08 WAS -07, CUFF DIA TOLERANCE INCREASED TO +/- 0.005                                                                                       | AP                                                                                                                                                                                                                                                                                 | 15.04.24     |
| F          | REMOVED PRIME/ PAINT ON CUFFS, 2.516 WAS 2.500 (C8-5)                                                                                                                          | AP                                                                                                                                                                                                                                                                                 | 15.02.03     |
| E          | D5152-041 FWD STEP POST ASSY WAS D5150-1 STEP POST, SCOTCH BRITE 7447 RED WAS 180 GRIT SANDPAPER, ANGLE (B7-2) DIMENSIONED FROM NEW DATUM                                      | DB                                                                                                                                                                                                                                                                                 | 15.01.15     |
| D          | ADD D5150-1 STEP POST (2X), MOVED INSPECTION WINDOW DETAIL TO SHEET 1, MODIFIED NOTES ON SHT 1 & 3                                                                             | DB                                                                                                                                                                                                                                                                                 | 14.11.25     |
| C          | CR3212-4-07 RIVETS WERE CR3212-4-09, 7.5 DEG CUFF ANGLE OFFSET REMOVED (SHT 3), CUFF DIAMETER ON D119-796-141TRN REDUCED TO 2.500, ADDED INSPECTION WINDOW (B7-3), ADDED SHT 4 | AP                                                                                                                                                                                                                                                                                 | 14.10.23     |
| B          | ADDED D2873-043 RADIUS BLOCK, CR3212-4-09 RIVETS, ADDED SKIDTUBE REFERENCE FOR LOCATING CUFF HOLES, RE-ORGANIZED NOTES AND REMOVED REDUNDANT INFORMATION                       | AP                                                                                                                                                                                                                                                                                 | 14.09.02     |
| A          | NEW ISSUE                                                                                                                                                                      | AP                                                                                                                                                                                                                                                                                 | 14.08.09     |
| REV.       | DESCRIPTION                                                                                                                                                                    | BY                                                                                                                                                                                                                                                                                 | DATE         |
| DESIGN     | AP                                                                                                                                                                             | <b>DART AEROSPACE LTD</b><br>HAWKESBURY, ONTARIO, CANADA                                                                                                                                                                                                                           |              |
| DRAWN      | AP                                                                                                                                                                             |                                                                                                                                                                                                                                                                                    |              |
| CHECKED    | AJS                                                                                                                                                                            | DRAWING NO.                                                                                                                                                                                                                                                                        | REV. H       |
| MFG. APPR. | JLM                                                                                                                                                                            | D119-796-141                                                                                                                                                                                                                                                                       | SHEET 1 OF 6 |
| APPROVED   | WM                                                                                                                                                                             | TITLE                                                                                                                                                                                                                                                                              | SCALE        |
| DE APPR.   | DS                                                                                                                                                                             | XTUBE ASSY (AW119 MKII FWD)                                                                                                                                                                                                                                                        | NTS          |
| DATE       | 15.10.13                                                                                                                                                                       | <small> COPYRIGHT © 2014 BY DART AEROSPACE LTD<br/> THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL, AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD. </small> |              |







**D119-796-141BND CROSSTUBE, FWD** 9  
BENDING AND DRILLING DETAIL

**NOTES:**

- 1) MATERIAL: MADE FROM D119-796-141TRN
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2  
DO NOT APPLY PRIMER TO CUFFS IN LOCATION SHOWN, MASK PRIOR TO FINISHING
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 16.70 lbs
- 8) PART IS SYMMETRICAL ABOUT CENTERLINE
- 9) BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6.8% BASED ON OD.
- 10) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038
- 11) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM DEFECTS SUCH AS SCRATCHES, NICKS OR DENTS. DEFECTS UP TO 0.005 MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.

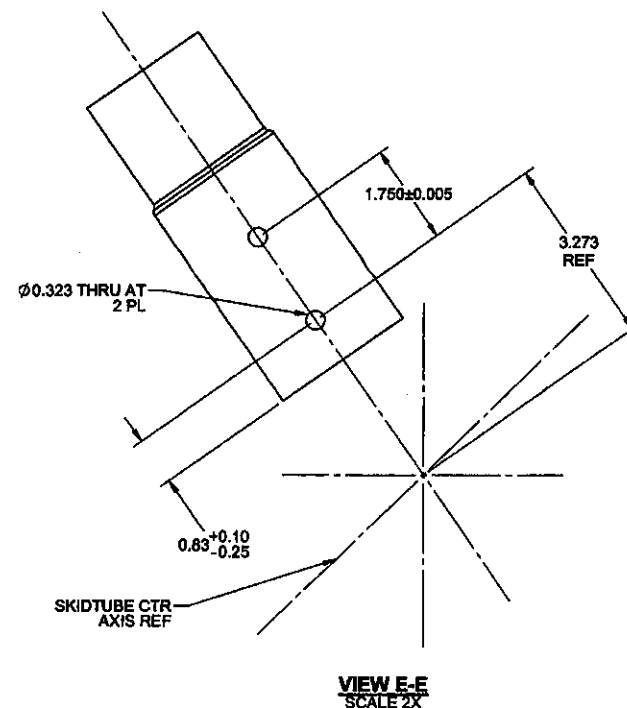
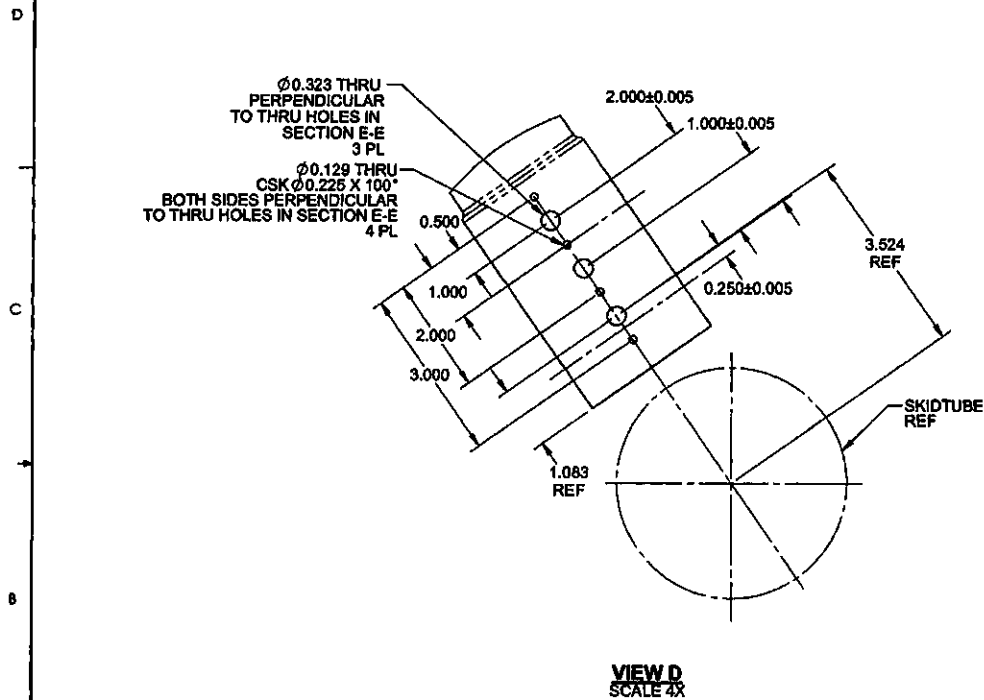
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| DESIGN     | AP       | <b>DART AEROSPACE LTD</b>                                                                                                                                                                                                                                                 |              |
| DRAWN      | AP       | HAWKESBURY, ONTARIO, CANADA                                                                                                                                                                                                                                               |              |
| CHECKED    | AJS      | DRAWING NO.                                                                                                                                                                                                                                                               | REV. H       |
| MFG. APPR. | JLM      | <b>D119-796-141</b>                                                                                                                                                                                                                                                       | SHEET 3 OF 6 |
| APPROVED   | WM       | TITLE                                                                                                                                                                                                                                                                     | SCALE        |
| DE APPR.   | DS       | <b>XTUBE ASSY (AW119 MKII FWD)</b>                                                                                                                                                                                                                                        | NTS          |
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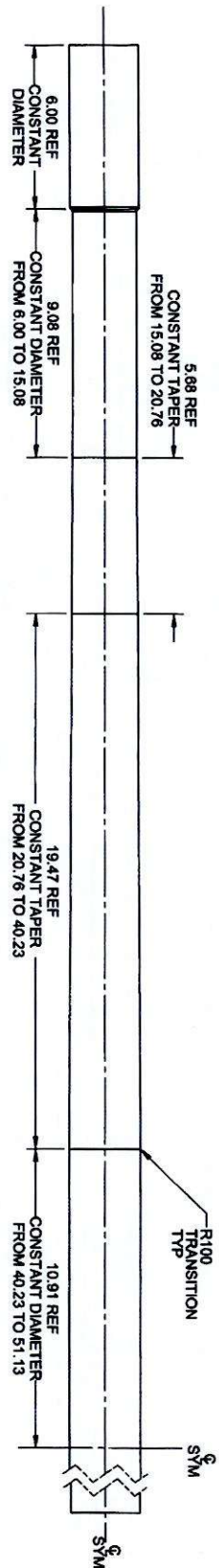
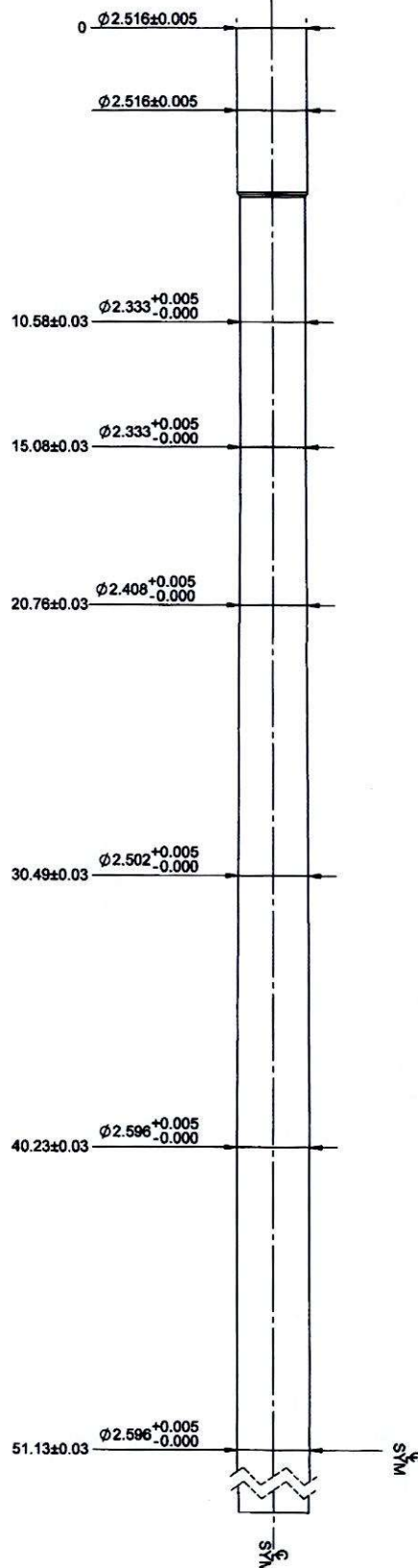


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| DESIGN     | AP       | <b>DART AEROSPACE LTD</b>                                                                                                                                                                                                                                             |              |
| DRAWN      | AP       | HAWKESBURY, ONTARIO, CANADA                                                                                                                                                                                                                                           |              |
| CHECKED    | AJS      | DRAWING NO.                                                                                                                                                                                                                                                           | REV. H       |
| MFG. APPR. | JLM      | D119-796-141                                                                                                                                                                                                                                                          | SHEET 4 OF 6 |
| APPROVED   | WM       | TITLE                                                                                                                                                                                                                                                                 | SCALE        |
| DE APPR.   | DS       | XTUBE ASSY (AW119 MKII FWD)                                                                                                                                                                                                                                           | NTS          |
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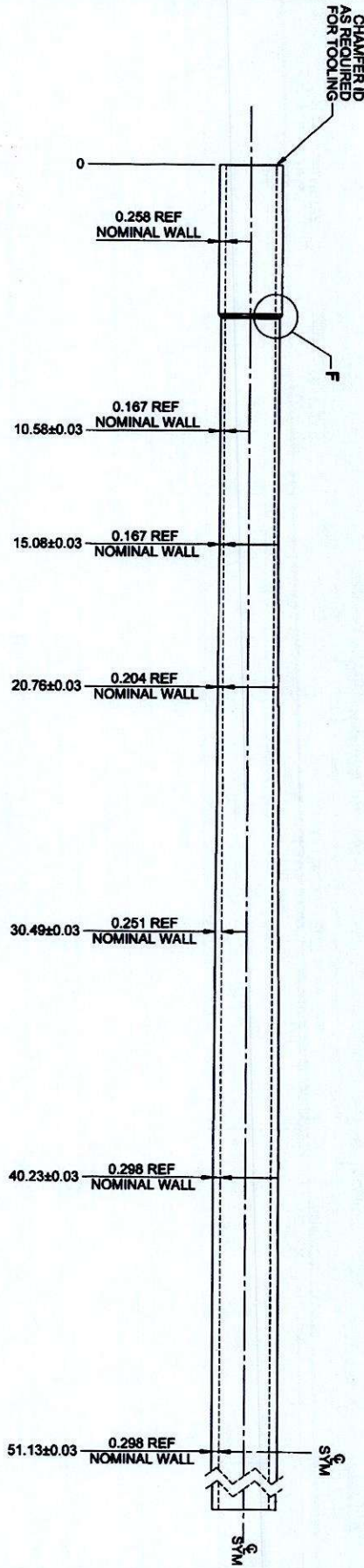
**D119-796-141TRN CROSSTUBE, FWD**

- NOTES:**
- 1) MATERIAL: MANUFACTURE FROM D6024-103 (PREFERRED) OR D6005-103 FINISHED LENGTH = 102.26 ± 0.020 (BEFORE BENDING/TRIMMING)
  - 2) FINISH: NONE
  - 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
  - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
  - 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
  - 6) IDENTIFICATION: NONE
  - 7) WEIGHT: 16.70 lbs
  - 8) PART IS SYMMETRICAL ABOUT CENTERLINE

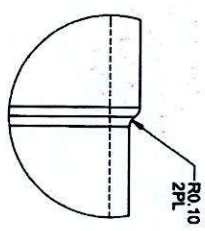
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| DESIGN     | AP       | DART AEROSPACE LTD          |
| DRAWN      | AP       | HAWKESBURY, ONTARIO, CANADA |
| CHECKED    | ALS      | DRAWING NO. D119-796-141    |
| MFG. APPR. | JLM      | REV. H                      |
| APPROVED   | WMI      | SHEET 5 OF 6                |
| DE APPR.   | DS       | SCALE                       |
| DATE       | 15.10.13 | NTS                         |





D119-796-141TRN CROSSTUBE FWD  
SUPPLEMENTAL VIEW: NOMINAL WALL THICKNESS



DETAIL F  
SCALE 2X

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2015-11-04  
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|            |          |          |                            |
|------------|----------|----------|----------------------------|
| DESIGN     | AP       | AP       | DART AEROSPACE LTD         |
| DRAWN      | AP       | AP       | HANESBURY, ONTARIO, CANADA |
| CHECKED    | AJS      | AJS      | DRAWING NO. D119-796-141   |
| MFG. APPR. | JLM      | JLM      | REV. H                     |
| APPROVED   | WM       | WM       | SHEET 6 OF 6               |
| DE APPR.   | DS       | DS       | SCALE NTS                  |
| DATE       | 15.10.13 | 15.10.13 |                            |

COMPONENT IS 2014 BY DART AEROSPACE LTD  
THE COMPANY IS A REGISTERED FIRM IN THE PROVINCE OF ONTARIO  
ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED

Entered: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / ROUTE UPDATE

NCR No. \_\_\_\_\_

Route update only ☐

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |                        |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------|--|
| Job: _____<br><br>Part No. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/> | <b>DEPARTMENT/PROCESS</b><br><br><div style="display: flex; justify-content: space-between;"> <div>           Skid-tube <input type="checkbox"/><br/>           Machining <input type="checkbox"/><br/>           Large Fab <input type="checkbox"/> </div> <div>           Cross tube <input type="checkbox"/><br/>           Small Fab <input type="checkbox"/><br/>           Finishing <input type="checkbox"/> </div> <div>           Eng. (Non-AW) <input type="checkbox"/><br/>           Prod. Eng. Coord. <input type="checkbox"/><br/>           Rec/Store/Packaging <input type="checkbox"/> </div> <div>           Engineering <input type="checkbox"/><br/>           Water Jet <input type="checkbox"/><br/>           Supplier <input type="checkbox"/><br/>           Quality <input type="checkbox"/> </div> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |                        |  |
| Date :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Sequence #:                                                                                                                       | QTY Affected :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  | MRB (QS1042)           |  |
| Description Work Order Deviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                   | Disposition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  | Completed By           |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  | Lead hand / Supervisor |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |                        |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |                        |  |
| <b>Root Cause</b><br><br><div style="display: flex; flex-direction: column;"> <div>Operator <input type="checkbox"/></div> <div>Manufacturing Process <input type="checkbox"/></div> <div>Equip/Tooling <input type="checkbox"/></div> <div>Handling/Preservation <input type="checkbox"/></div> <div>Material <input type="checkbox"/></div> <div>Product Improvement <input type="checkbox"/></div> <div>Process Improvement <input type="checkbox"/></div> <div>Human Factors <input type="checkbox"/></div> </div> |                                                                                                                                   | <b>FAULT CATEGORY</b><br><br><div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> <input type="checkbox"/> Pressure/Forced<br/> <input type="checkbox"/> Bending<br/> <input type="checkbox"/> Crushing<br/> <input type="checkbox"/> Cracks<br/> <input type="checkbox"/> Crimp/Kink/Ripple/Wave/Twist<br/> <input type="checkbox"/> Marks/Chatter<br/> <input type="checkbox"/> Mislabeled         </div> <div style="width: 50%;"> <input type="checkbox"/> Contamination<br/> <input type="checkbox"/> Misaligned/off center<br/> <input type="checkbox"/> BOM/Route<br/> <input type="checkbox"/> Broken/Damage/Defect<br/> <input type="checkbox"/> Incomplete/Unclear Instructions<br/> <input type="checkbox"/> Drill Holes<br/> <input type="checkbox"/> Fit/Function         </div> <div style="width: 50%;"> <input type="checkbox"/> Power Loss/Surge<br/> <input type="checkbox"/> Folio/Program<br/> <input type="checkbox"/> Grain Direction<br/> <input type="checkbox"/> Weld<br/> <input type="checkbox"/> Wrong Stock Pulled<br/> <input type="checkbox"/> Out of Sequence<br/> <input type="checkbox"/> Off-set/Set-up         </div> <div style="width: 50%;"> <input type="checkbox"/> Positioned Wrong<br/> <input type="checkbox"/> Outside Tolerance<br/> <input type="checkbox"/> Drawing<br/> <input type="checkbox"/> Finish<br/> <input type="checkbox"/> Part Lost/Missing<br/> <input type="checkbox"/> Misread         </div> </div> |  |                        |  |
| Other/Details: _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |                        |  |